

L7 ANSWER 11 OF 20 CAPLUS COPYRIGHT 2005 ACS on STN

Full Text	Citing References
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AN 1992:608379 CAPLUS

DN 117:208379

ED Entered STN: 28 Nov 1992

TI The trapping capacity for **free radicals** of biologically related substances

AU Okada, Yukio; Kondo, Yukio

CS Fac. Eng., Himeji Inst. Technol., Himeji, 671-22, Japan

SO Kenkyu Hokoku - Himeji Kogyo Daigaku Kogakubu (1991), 44, 104-9

CODEN: KHHKEQ; ISSN: 0917-0901

DT Journal

LA English

CC 9-16 (Biochemical Methods)

Section cross-reference(s): 1, 2, 17

AB To examine the trapping capacity for **free radicals** of, e.g., steroid hormones, drugs, and foods, the effects of the various substances on radical polymn. of Me methacrylate initiated by azobisisobutyronitrile (AIBN) or under UV irradn. were studied. The trapping capacity was estd. by the following relation: R_a/R_{lm} where R_a is rate of polymn. (R_p) initiated by AIBN and R_{lm} is R_p in the presence of the biol. substance. It was found that bilirubin, estradiol, and vanillin showed significant trapping capacity.

ST free radical trapping capacity detn biomol

IT Radicals, properties

RL: PRP (Properties)

(trapping capacity for, of biol. related substances)

IT 80-62-6, Methyl methacrylate

RL: RCT (Reactant); RACT (Reactant or reagent)

(radical polymn. of, for evaluation of **free radical** trapping capacity)IT 50-28-2, Estra-1,3,5(10)-triene-3,17-diol (17 β)-, properties

121-33-5 635-65-4, Bilirubin, properties

RL: PRP (Properties)

(trapping capacity of, for **free radicals**)

L7 ANSWER 20 OF 20 MEDLINE on STN

Full Text	Citing References
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AN 2000497393 MEDLINE

DN PubMed ID: 10984681

TI Effect of vanillin on methylene blue plus light-induced single-strand breaks in plasmid pBR322 DNA.

AU Kumar S S; Ghosh A; Devasagayam T P; Chauhan P S

CS Cell Biology Division, Bhabha Atomic Research Centre, 400 085, Mumbai, India.

SO Mutation research, (2000 Sep 20) 469 (2) 207-14.

Journal code: 0400763. ISSN: 0027-5107.

CY Netherlands

DT Journal; Article; (JOURNAL ARTICLE)

LA English

FS Priority Journals

EM 200010

ED Entered STN: 20001027

Last Updated on STN: 20001027

Entered Medline: 20001019

AB The ability of vanillin (4-hydroxy-3-methoxybenzaldehyde), a naturally occurring food flavouring agent, in inhibiting photosensitization-induced single-strand breaks (ssbs) in plasmid pBR322 DNA has been examined in an in vitro system, independent of DNA repair/replication processes. Photosensitization of DNA with methylene blue, visible light and oxygen, induced ssbs resulting in the production of open circular form (OC form) in a concentration-dependent manner. The yield of OC form induced by photosensitization was increased several-fold by deuteration of the buffer and was found to be inhibited by sodium azide, a **scavenger** of singlet oxygen ($1O(2)$). Vanillin, per se, did not induce but inhibited photosensitization-induced ssbs in plasmid DNA, at millimolar concentrations. The inhibitory effect of vanillin was both concentration- and time-dependent. On a molar basis, vanillin was, however, less effective than trolox, a water-soluble analogue of alpha-tocopherol. Photosensitization by methylene blue system generates singlet oxygen, as one of the major components of ROS. Therefore, interaction of singlet oxygen with vanillin was investigated. The rate constant of vanillin with $1O(2)$ was estimated to be $5.93 \times 10(7) M(-1) s(-1)$ and that of sodium azide as $2.7 \times 10(8) M(-1) s(-1)$. The present investigations show that vanillin can protect against photosensitization-induced ssbs in the plasmid pBR322 DNA, and this effect may partly be due to its ability to **scavenge** $1O(2)$.

CT **Antioxidants: PD, pharmacology**

*Benzaldehydes: PD, pharmacology

*DNA Damage

Flavoring Agents: PD, pharmacology

Free Radical Scavengers: PD, pharmacology

Light

*Methylene Blue: TO, toxicity

Oxygen: ME, metabolism

*Photosensitizing Agents: TO, toxicity

*Plasmids: DE, drug effects

Plasmids: ME, metabolism

*Plasmids: RE, radiation effects

Singlet Oxygen

RN 121-33-5 (vanillin); 17778-80-2 (Singlet Oxygen); 61-73-4 (Methylene Blue); 7782-44-7 (Oxygen)

CN 0 (Antioxidants); 0 (Benzaldehydes); 0 (Flavoring Agents); 0 (Free Radical Scavengers); 0 (Photosensitizing Agents); 0 (Plasmids)

(FILE 'HOME' ENTERED AT 12:32:46 ON 08 SEP 2005)

FILE 'REGISTRY' ENTERED AT 12:42:03 ON 08 SEP 2005

E VANILLIN/CN

L1 1 S E3

FILE 'CAPLUS, BIOSIS, MEDLINE' ENTERED AT 12:42:19 ON 08 SEP 2005

L2 11871 S L1

L3 3 S L2 AND RADIAT? AND STERIL?

L4 4 S L2 AND IRRADIAT? AND STERIL?

L5 2 S L4 NOT L3

L6 310 S L2 AND (IRRADIAT? OR RADIAT?)

L7 20 S L6 AND ((FREE (W) RADICAL) OR SCAVENG? OR ANTIOXIDANT)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1622	vanillin	EPO; JPO; DERWENT	OR	ON	2005/09/08 13:21
L2	24	1 and (radiat\$3 or irradiat\$3)	EPO; JPO; DERWENT	OR	ON	2005/09/08 13:13
L3	7448	vanillin	US-PGPUB; USPAT	OR	ON	2005/09/08 13:21
L4	33	3 same (radiat\$3 or irradiat\$3)	US-PGPUB; USPAT	OR	ON	2005/09/08 13:35
L5	1	"5977068".PN.	USPAT; USOCR	OR	ON	2005/09/08 13:32
L6	2	wo-9422484-\$.did.	EPO; JPO; DERWENT	OR	ON	2005/09/08 13:33
L7	4	3 same (radioprotect\$3 or photoprotect\$3)	US-PGPUB; USPAT	OR	ON	2005/09/08 13:36
L8	4	1 and (radioprotect\$3 or photoprotect\$3)	EPO; JPO; DERWENT	OR	ON	2005/09/08 13:36